# ILLINOIS BUSINESS REVIEW

*A MONTHLY SUMMARY OF BUSINESS CONDITIONS FOR ILLINOIS*

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## HIGHLIGHTS OF BUSINESS IN DECEMBER

The month of December was undoubtedly the most successful one that department stores had ever had. For the month as a whole, sales exceeded last December's figure by a substantial 10 percent. The gain in retail sales generally, however, may not have been as large as that for department stores because of a smaller pickup in auto sales.

Elsewhere on the business scene, activity continued brisk. Employment and electric power output, two key indicators of business activity, remained at very high levels, while unemployment was a nominal 2.4 million. Despite a slackening in automobile production, steel producers had sufficient orders on their books to keep them operating at peak rates for months ahead. Copper, zinc, and lead continued in short supply, with further price increases posted or threatened.

### 1955 in a Nutshell

For the nation as a whole, 1955 was the most prosperous year so far in its history. The gross national product, the market value of aggregate goods and services, is estimated at $387 billion, 7 percent more than in 1954 and more than three and a half times the value of goods and services turned out in the big prewar prosperity year, 1929.

The construction boom, record consumer expenditures (especially for durable goods), renewed accumulation of inventories, and an upturn in business investment were the principal factors underlying the 1955 prosperity. Outlays for new construction in 1955 rose 12 percent to a new high exceeding $42 billion, with new housing starts rising to 1,300,000 and industrial and commercial building at new peaks. Retailers sold $185 billion worth of goods in 1955, $15 billion more than in 1954 or in any other previous year, while consumers went deeper into debt than ever before. This record consumer demand accompanied by business needs for additional inventories and production facilities led to new production peaks, the most notable perhaps being the 9.2 million motor vehicles produced (8.0 million passenger cars) and the 117 million tons of steel ingots and castings poured during the year. Concomitantly, employment rose to 63 million, and the stock market soared to new highs. Through all this, most prices remained relatively stable, though wage rates and industrial raw material prices did begin to move up after the middle of the year.

To farmers, however, 1955 was not a good year. The prices of farm products dropped, costs did not, and farm incomes declined on the average by 10 percent.

### Rising Consumer Debt

Consumer debt continued to mount during November and December. The total outstanding at the beginning of December came to $35.1 billion and considering the usual seasonal upsurge in borrowing during December, this figure may have reached $36 billion by the end of the year.

Contrary to the situation earlier in the year, borrowing to finance automobile purchases diminished greatly in importance. Consumer installment debt on auto purchases rose only $77 million this November, the smallest such increase since the beginning of the year. Installment buying of other consumer goods was the main force behind the rise in consumer debt in November, the total of such obligations outstanding increasing by $140 million. There were some indications that such buying also was tapering off, however, as the increase during November was about half that incurred monthly in the early part of 1955 and not much more than the October figure.

### Proposed Legislation

Legislation with important implications for business may be enacted at the current session of Congress if the recommendations of the President's State of the Union message are carried out. A new approach to the problem of farm surpluses is proposed, primarily through the establishment of a "soil bank" plan to compensate farmers for keeping surplus land out of production. The plan would be buttressed by strengthened commodity programs within the present system of flexible price supports.

Increased foreign economic aid, a five-year Federal aid program for more school buildings, the construction of 35,000 new public housing units in each of the next two years, a new program of highway construction, experimental Federal flood-damage annuities, higher mail rates, and extended coverage of the minimum wage law were other important areas in which new legislation was requested. The President also expressed a preference for reducing the national debt before enacting tax reductions.

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# ILLINOIS BUSINESS REVIEW

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## Not Much Help

During the minor recession of 1954 in this country, manufacturing production in Western Europe continued upward. After recovery got under way here, the upswing abroad was accelerated. Strong demand for raw materials lifted production in the less industrialized countries, and improved food supplies eased their problems. The world-wide boom progressed to unprecedented levels in 1955, and mild monetary restraints were imposed in many countries to prevent threatened inflation.

The advance abroad not only displayed extreme vigor; it took place with little rise in consumer prices, and foreign reserves of gold and dollars continued to rise through 1955. This has given the boom an appearance of underlying strength. It looks so strong that some observers now regard it as an element of strength in our own economic picture. Analysis indicates, however, that the foreign sector cannot be expected to provide any substantial prop to business in this country.

### The Role of International Trade

As activity moved up into the present extended position, developments here and abroad have been mutually supporting. Export markets expanded on both sides and became a factor in the expansion of domestic investment throughout the world. When the movement comes to an end, the loss, too, will be felt on both sides.

The role of expanding trade in inducing new investment has been relatively unimportant in this country, though not insignificant. Since the summer of 1952, our exports (exclusive of military aid shipments) have followed an irregularly upward course, realizing an over-all gain of about 20 percent. During this period, Western Europe moved into the position of our leading export market, surpassing both Canada and Latin America. Limitations on their production forced them to buy from us more capital equipment and raw materials like coal and steel, helping in some cases to push our industries up to capacity.

In the European countries, investment undertaken to expand exports has been much more important than here. They started from an extremely depressed position at the end of the war, and increases in both production and exports have been relatively much greater than ours. To accomplish this, industries had to be created.

The new industries were heavily concentrated in the durable goods field. From prewar 1937 to early 1955 output of metal products in Western Europe rose 90 percent whereas textiles rose only 15 percent. With their industry becoming more like our own, they have been better able to compete with our industry both here and in other countries. A large part of the postwar gains in their exports to us have consisted of automobiles, bicycles, sewing machines, civilian aircraft, and other metal products. Increases in exports have not been confined to such products, of course, and their exports to each other have risen much faster than their exports to us or to other parts of the world.

Achieving trade expansion of this magnitude required heavy investment and heavy imports, which could not be financed wholly by exports. The necessary financing was obtained in good part as a result of our assumption of leadership in the Cold War. Our government grants to Western Europe have generally been sufficient to cover the deficits in their current trade balance with us. Our military expenditures abroad have represented an important addition to our total import demand, greatly reducing their deficits in civilian trade. Substantial payments by our civilians as gifts or remittances and heavy travel expenditures have also made substantial funds available, but these have been of a lower order of magnitude than the government programs.

Looking at our balance of payments with the rest of the world as a whole, the total financing we have provided by purchases, gifts, grants, and investments abroad has been more than sufficient to finance a substantial foreign deficit on merchandise account; it has enabled other countries to accumulate reserves. The rise in foreign gold and dollar assets has amounted to roughly $2 billion a year since early 1952. At the end of 1955, holdings of such assets are estimated at over $33 billion, and represent by far the greatest total reserves ever available to them.

### No Life-Line From Abroad

If business here should decline the trade picture would change drastically. The current boom is highly concentrated in durable goods. Imports of materials for use in the durable goods industries have grown to half the total value of imports of industrial materials, and durable goods have also grown in our imports of finished products. At the same time, imports remain the marginal source of supply for many nondurables, and consequently tend to fluctuate more widely than our own production and consumption of such commodities. The swings are particularly acute when inventories play an important role in a reversal. The prospective recession therefore may curtail our total imports much more drastically than did the minor recession of 1954. With foreign purchases from us still tending upward, this shift would undoubtedly reverse the balance of payments sufficiently to require use of reserves by foreign holders.

Since total reserves are currently so high it would seem that the shift in the balance of payments might represent a substantial sustaining force on the downswing, as it did in 1947. There seems little doubt that the net foreign investment item will rise, partially offsetting other declines in our gross national product, though countries that have been leaning on us will not find it easy to adjust to the change. Their own economies are vulnerable enough to give them plenty to worry about.

(Continued on page 6)

# THE HOME APPLIANCE INDUSTRY

The term "household appliance" has begun to take on a new meaning. Not too many years ago such items consisted mainly of refrigerators, stoves, washing machines, toasters, and electric irons. Today, however, freezers, dryers, air conditioners, blenders, broilers, roasters, coffeemakers, garbage disposal units, ironing machines, food mixers, heaters, radio and television sets, dishwashers, and even the kitchen sink may also be classified as household appliances. With new models and new types of products being constantly turned out, it appears that this industry is still in process of evolution.

## Growth

Since the turn of the century, the home appliance industry has become one of the largest manufacturers of consumer durables in the nation, second only to the automotive industry. In 1955 over 88 million electrical home appliances valued at $7.9 billion were sold as compared with 37 million valued at $1 billion in 1939, according to *Electrical Merchandising*.

There are many reasons for the remarkable growth of this industry. In the first place, there has been a steady flow of new products designed to give greater utility and convenience. These new products have created new markets and businesses which in turn have led to the development of additional new products. The increase in new and improved products has also contributed to the development of a huge replacement market. A good example is the automatic washer and dryer — only 76 percent of the 50 million American homes have washers, but already combination units that both wash and dry threaten to make the single units obsolete.

Other factors in the rapid growth of the appliance industry have been the steady rise in population and an increase in purchasing power. Today, there are more people earning higher incomes than ever before. During 1955, Americans spent $35 billion on durable goods as compared with $6.7 billion in 1939, and it is estimated that by 1965 this will have increased to $50 billion.

One of the biggest booms in the home appliance field has been in television. Fifteen years ago it was unknown commercially, but today, 70 percent of the nation's homes have TV sets, and nearly 36 million receivers have been sold. However, the advent of color TV may make all of these receivers obsolete, and consequently open up a still more lucrative market.

A dramatic stride has also taken place in room air conditioners — a potential market that has scarcely been penetrated. First introduced commercially in 1946, over one million units were sold in 1954 alone. Today less than 6 percent of all homes are air-conditioned, but it is estimated that by 1965, 60 percent will be.

With the introduction of so many new and different appliances in such a short period of time, and faced by the fact that each new product has a tendency to make the old obsolescent, the consumer might well wonder if he is better off in buying the new product or in waiting for the yet-undeveloped gadget of tomorrow.

## Development in Illinois

Illinois has played an important role in the creation of the home appliance industry. Many of the forerunners of our present-day appliances were first developed within the State during the early 1900's. For the most part, early progress was closely linked with the development and the availability of electric power.

In 1906, Edward N. Hurley designed and built the first electric washing machine in a Cicero loft building. From this humble beginning grew the present-day Thor Corporation, which later introduced the country's first combination clothes and dish-washing machine, and the foldaway electric ironer.

Three years after the introduction of the electric washing machine the first practical dishwasher was made by George Walker, a Chicagoan. At about the same time, George A. Hughes put together the world's first electric stove and subsequently merged with Hotpoint, now the largest electric range manufacturer in the world. Walker's dishwasher was developed further by Hotpoint, and in 1940 the first all-electric dishwasher was produced. In addition to ranges and dishwashers, Hotpoint also produces automatic washers and dryers, refrigerators, freezers, air conditioners, and many other electrical home appliances.

The invention of the audion — the three-element vacuum tube — in 1900 enabled Chicago to claim to be the "birthplace" of the electronics industry. Though difficult to gauge in size, the Chicago area electronics industry is the largest in the world, and a good portion of it is devoted to the manufacture of radio and television sets. Among the many Illinois firms producing radio and TV sets are Admiral, Hallicrafters, Motorola, Raytheon, and Zenith.

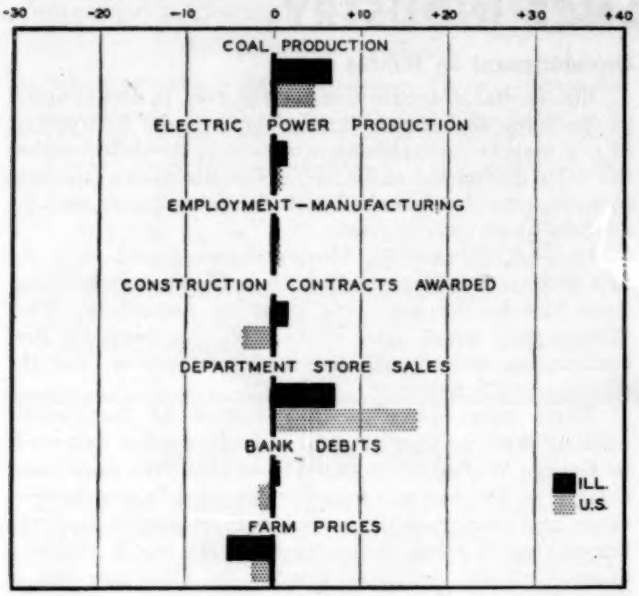
Many other Illinois companies produce various home appliance lines. Sunbeam Corporation began manufacturing an electric iron in 1910, but it is perhaps best known for the invention of the Mixmaster in 1930. McGraw Electric Company commenced manufacturing toasters in 1937 and the name Toastmaster has become a famous trademark. The Mitchell Manufacturing Company is the largest manufacturer of room air conditioners and was one of the first in this field. Other well-known Illinois companies are Dormeyer, International Harvester, Fairbanks-Morse, Cory, Deep-freeze, Altorfer, and Roper, to name but a few. Of the 150 firms manufacturing appliances in the State, more than 100 are located within the Chicago area, with others in Bloomington, Danville, Effingham, Geneva, Freeport, Peoria, and Rockford.

In the past few years, the Illinois household appliance industry has become a giant, producing over 50 different types of appliances with an annual value of approximately $500 million. Even so, the potential market for many appliances has scarcely been penetrated, and there is a large future market for goods that have not yet been developed. As such, the industry appears to have a high growth potential, with Illinois firms continuing to produce nearly every type of home appliance.

# STATISTICAL SUMMARY OF BUSINESS ACTIVITY

## SELECTED INDICATORS

**Percentage changes October, 1955, to November, 1955**




## ILLINOIS BUSINESS INDEXES

| Item | November 1955 (1947-49 = 100) | Percentage Change from Oct. 1955 | Percentage Change from Nov. 1954 |
|---|---|---|---|
| Electric power[1] | 208.0 | +1.4 | + 9.6 |
| Coal production[2] | 88.0 | +6.5 | − 2.3 |
| Employment—manufacturing[3] | 109.0 | +0.4 | + 7.3 |
| Weekly earnings—manufacturing[3] | 149.2[a] | +1.2 | +11.2 |
| Dept. store sales in Chicago[4] | 112.0[b] | −5.1 | + 7.7 |
| Consumer prices in Chicago[5] | 119.1 | +0.1 | + 1.3 |
| Construction contracts awarded[6] | 245.9 | +1.5 | +39.1 |
| Bank debits[7] | 158.8 | +0.7 | + 8.8 |
| Farm prices[8] | 71.0[c] | −5.3 | −16.5 |
| Life insurance sales (ordinary)[9] | 203.8 | +2.7 | +15.0 |
| Petroleum production[10] | 126.6 | −4.2 | +14.8 |

[1] Fed. Power Comm.; [2] Ill. Dept. of Mines; [3] Ill. Dept. of Labor; [4] Fed. Res. Bank, 7th Dist.; [5] U. S. Bur. of Labor Statistics; [6] F. W. Dodge Corp.; [7] Fed. Res. Bd.; [8] Ill. Crop Rpts.; [9] Life Ins. Agcy. Manag. Assn.; [10] Ill. Geol. Survey.

[a] October data; comparisons relate to September, 1955, and October, 1954. [b] Seasonally adjusted. [c] Revised series.

## UNITED STATES MONTHLY INDEXES

| Item | November 1955 | Percentage Change from Oct. 1955 | Percentage Change from Nov. 1954 |
|---|---|---|---|
| | Annual rate in billion $ | | |
| Personal income[1] | 311.4[a] | + 0.7 | + 7.1 |
| Manufacturing[1] | | | |
| Sales | 328.8[a] | + 2.6 | +14.2 |
| Inventories | 45.6[a, b] | + 0.7 | + 5.3 |
| New construction activity[1] | | | |
| Private residential | 16.5 | − 5.6 | + 6.3 |
| Private nonresidential | 14.5 | − 4.6 | +13.6 |
| Total public | 11.8 | −16.5 | + 1.4 |
| Foreign trade[1] | | | |
| Merchandise exports | 16.7[c] | +11.3 | +10.2 |
| Merchandise imports | 12.1[c] | + 6.8 | +32.3 |
| Excess of exports | 4.6[c] | +25.0 | −23.3 |
| Consumer credit outstanding[2] | | | |
| Total credit | 35.1[b] | + 1.2 | +20.0 |
| Installment credit | 27.2[b] | + 1.1 | +23.8 |
| Business loans[2] | 26.0[b] | + 3.5 | +17.1 |
| Cash farm income[3] | 38.4 | −11.1 | 0.0 |
| | Indexes (1947-49 = 100) | | |
| Industrial production[2] | | | |
| Combined index | 144[a] | + 0.7 | +12.5 |
| Durable manufactures | 163[a] | + 0.6 | +14.8 |
| Nondurable manufactures | 129[a] | + 0.8 | + 9.3 |
| Minerals | 125[a] | + 2.5 | +10.6 |
| Manufacturing employment[4] | | | |
| Production workers | 109[a] | + 1.4 | + 7.1 |
| Factory worker earnings[4] | | | |
| Average hours worked | 103 | + 0.2 | + 2.5 |
| Average hourly earnings | 145 | + 1.0 | + 5.5 |
| Average weekly earnings | 150 | + 1.3 | + 8.1 |
| Construction contracts awarded[5] | 235 | − 3.5 | +19.9 |
| Department store sales[3] | 123[a] | + 0.8 | + 8.8 |
| Consumers' price index[4] | 115 | + 0.1 | + 0.3 |
| Wholesale prices[4] | | | |
| All commodities | 111 | − 0.4 | + 1.1 |
| Farm products | 84 | − 3.1 | − 9.8 |
| Foods | 99 | − 1.4 | − 4.8 |
| Other | 119 | + 0.3 | + 3.9 |
| Farm prices[3] | | | |
| Received by farmers | 83 | − 2.4 | − 6.7 |
| Paid by farmers | 112 | 0.0 | 0.0 |
| Parity ratio | 81[d] | − 1.2 | − 6.9 |

[1] U. S. Dept. of Commerce; [2] Federal Reserve Board; [3] U. S. Dept. of Agriculture; [4] U. S. Bureau of Labor Statistics; [5] F. W. Dodge Corp.

[a] Seasonally adjusted. [b] As of end of month. [c] Data are for October, 1955; comparisons relate to September, 1955, and October, 1954. [d] Based on official indexes, 1910-14 = 100.

## UNITED STATES WEEKLY BUSINESS STATISTICS

| Item | 1955 Dec. 31 | Dec. 24 | Dec. 17 | Dec. 10 | Dec. 3 | Jan. 1 |
|---|---|---|---|---|---|---|
| Production: | | | | | | |
| Bituminous coal (daily avg.) thous. of short tons | 1,820 | 1,846 | 1,750 | 1,803 | 1,730 | 1,486 |
| Electric power by utilities mil. of kw-hr | 10,751 | 11,614 | 11,602 | 11,426 | 11,359 | 9,425 |
| Motor vehicles (Wards) number in thous. | 119 | 170 | 196 | 206 | 206 | 142 |
| Petroleum (daily avg.) thous. bbl. | 6,987 | 6,992 | 6,946 | 6,923 | 6,836 | 6,343 |
| Steel 1947-49 = 100 | 134 | 136 | 141 | 140 | 137 | 107 |
| Freight carloadings thous. of cars | 575 | 672 | 715 | 727 | 728 | 529 |
| Department store sales 1947-49 = 100 | 89 | 231 | 255 | 235 | 197 | 80 |
| Commodity prices, wholesale: | | | | | | |
| All commodities 1947-49 = 100 | 111.4 | 111.2 | 111.1 | 111.1 | 111.1 | 109.5[a] |
| Other than farm products and foods 1947-49 = 100 | 119.5 | 119.5 | 119.5 | 119.4 | 119.2 | 114.9[a] |
| 22 commodities 1947-49 = 100 | 89.9 | 89.9 | 89.2 | 89.6 | 89.0 | 90.2 |
| Finance: | | | | | | |
| Business loans mil. of dol. | 26,701 | 26,627 | 26,317 | 26,117 | 26,014 | 22,423 |
| Failures, industrial and commercial number | 174 | 181 | 247 | 219 | 209 | 152 |

Source: *Survey of Current Business, Weekly Supplements.*

[a] Monthly index for December, 1954.

# RECENT ECONOMIC CHANGES

## Price Averages Steady

Wholesale prices declined slightly in November for the second successive month. However, at 111.2 (1947-49 = 100) the index was still somewhat above the narrow range that prevailed from the beginning of 1953 through the first half of 1955. The current reversal of the third-quarter rise resulted from further drops in the farm products and processed foods indexes which more than offset slight advances in industrial commodity prices. Industrial prices in November were 3.5 percent above January. Most of the increase has occurred since midyear, with such commodities as rubber, metals, and paper products leading the advance.

The decline in farm prices further depressed the Department of Agriculture's parity ratio during November. The index of farm prices received declined from 225 to 223 (1910-14 = 100) whereas prices paid were steady at 279. As a result the parity ratio was off a point to 80, its lowest since September, 1940.

Rising industrial wholesale prices and declining farm prices have not carried over significantly into consumer prices. Prices of some durables, notably new cars, were increased late in the year, but the consumer price index in November was unchanged from September and August and was only 0.6 percent higher than in January. The steadiness has been due to offsetting components in the index. Rental rates continued upward throughout 1955. Apparel and transportation costs, after declining through September, increased moderately in November, whereas food prices, which had risen through the first half, declined between July and November.

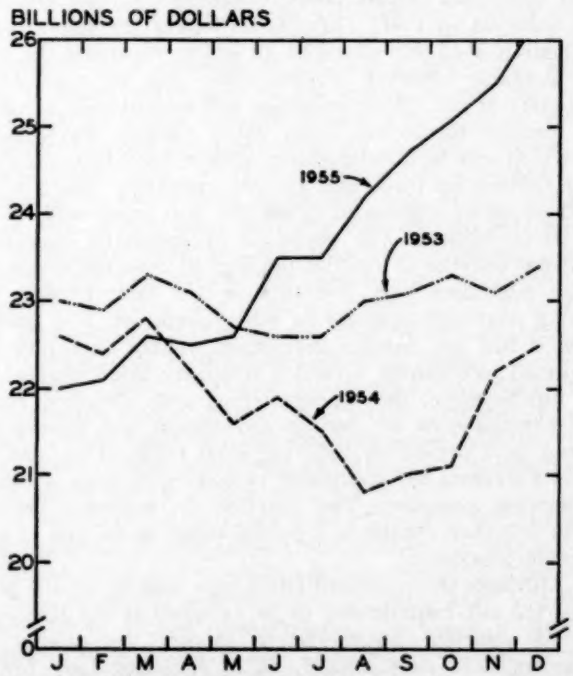
## Business Borrowing

The 1955 prosperity gave business loans their biggest postwar boost. In mid-December commercial, industrial, and agricultural loans outstanding were up to $26.3 billion, $4.2 billion over December, 1954.

In the first half of 1954, as inventory liquidation went into full swing, loans declined more than seasonally. Later in the year, however, the recovery in activity led to a sharp, more-than-seasonal increase in loans which carried over into 1955 (see chart). No net liquidation occurred in the first half of 1955, contrary to the usual seasonal pattern, and loans in December were 20 percent above their January level despite a doubling in borrowing costs during the year.

All major industrial groups increased bank borrowing last year. Sales finance companies added $1.3 billion to their bank debt and accounted for nearly a third of the rise in total business loans. Trade firms, the utilities, and the petroleum, coal, chemical, and rubber group also relied heavily on banks as a source of funds in 1955, with each group increasing bank borrowing by $400 million to $500 million during the year.

**BUSINESS LOANS**




Source: Federal Reserve Board.

## Life Expectancy of Business Population

Businesses started early in the new year have only about a fifty-fifty chance of surviving under the same management until 1958, if the postwar experience continues. However, the survivors have an even chance of remaining in business another 5 years after that, according to a study by the Department of Commerce of the age and life expectancy of business firms since the war.

The longer a firm remains in business the better its prospects become for adding years to its life. Whereas the average newly established firm has a life expectancy of 1¾ years, those that survive to age 1 may expect to continue in operation 3 more years, and those that survive to age 2, about 5 more years. Wholesale trade businesses do considerably better than the average, having an expected life of 3¼ years at birth and of more than another 8 years at age 2. At the other extreme, retail firms are the poorest risks. Their expected life when first established is only 1½ years, and if they survive to age 2 they may expect to remain in operation an additional 4¼ years.

Reflecting the large number of firms that entered the business population in the postwar period, which more than offset mortalities in the 1945-52 period and has about equaled them since, the majority of firms in the business population are relatively young. At the end of 1954, only 31 percent of the 4.2 million firms in the business population had been formed 10 years or more ago; and 12 percent were younger than a half year. Financial firms are the most durable, with 50 percent being over 10 years old, followed by mining and service industries with 40 percent in the older age bracket. Construction firms were the youngest of all in 1954, only 17 percent having been established more than 10 years earlier.

## Manufacturers' Sales, Orders Up

Manufacturers' sales and new orders increased in November, following moderate cutbacks in October. Seasonally adjusted sales rose 3 percent during the month to $27.4 billion. Shipments of durables were up somewhat more than nondurable goods, with all heavy goods industries reporting gains. New orders were also up by 3 percent, to $28.1 billion, after allowance for sea-

sonal changes. With orders continuing to run above sales, manufacturers added further to their backlogs.

The book value of manufacturers' inventories increased by $300 million in November to $45.6 billion. The increase amounted to about half that in September, when sales declined, but the two-month increase was the largest since 1953. However, prices figure more strongly in the current accumulation than during 1953, when wholesale prices of industrial commodities were more stable.

## Machine Tool Ordering Brisk

Machine-tool builders' new orders reached their highest level in over four years in November. Orders zoomed from $61 million in September to more than $100 million in October and rose an additional $25 million in November, a rise of more than 100 percent in two months. As shown by the chart, orders have tended upward since the fourth quarter of 1954 and in November were nearly four times their year-earlier level.

Shipments have not responded fully to the higher level of orders. They were up to $63.5 million in November, about $3 million above October, but still $30 million below the monthly rate in early 1954. As a result, backlogs of unfilled orders, which have been increasing since the fourth quarter of 1954, rose to 6.7 months' work, their highest since September, 1953.

## Employment at Record

Employment in December, though it dropped seasonally by 600,000 from November, was nevertheless at a record for the month. Heavy hiring by trade firms and post offices pushed nonfarm employment to an all-time high of 58.3 million, up 400,000 from November. This rise was more than offset by a cutback in farm jobs, as a million workers, mainly housewives and students, left the labor force in November after harvesting was completed. Census data in thousands of workers are as follows:

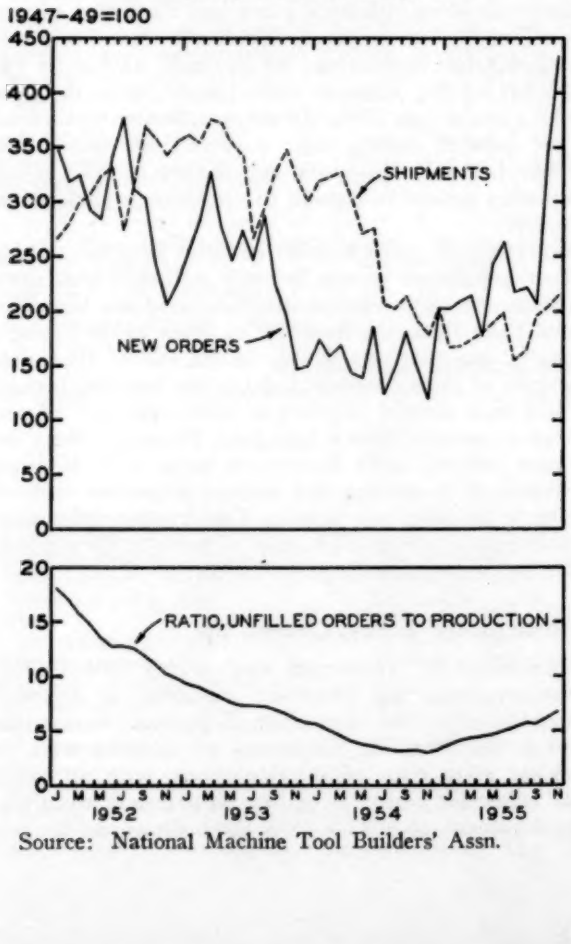
| | *Dec. 1955* | *Nov. 1955* | *Dec. 1954* |
|---|---|---|---|
| Civilian labor force | 66,600 | 67,205 | 63,526 |
| Employment | 64,200 | 64,807 | 60,688 |
| Agricultural | 5,900 | 6,920 | 5,325 |
| Nonagricultural | 58,300 | 57,887 | 55,363 |
| Unemployment | 2,400 | 2,398 | 2,838 |

## Housing Starts Off Further

Homebuilding continued to decline at a faster-than-seasonal rate in November. Private nonfarm housing starts totaled 89,200, slightly below November, 1954. At a seasonally adjusted annual rate of 1.2 million units, November's homebuilding was about 3 percent below September and October and the lowest rate of the year. It represented the third successive month that private starts were below year-earlier levels.

Requests for Veterans' Administration appraisals dropped back to 30,000 units, less than half the number of requests at the height of the building season and only slightly above the recession months of late 1953 and early 1954. Applications for FHA loans totaled 16,300 in November, not much higher than the 1953 lows.

**MACHINE TOOL ACTIVITY**




Source: National Machine Tool Builders' Assn.

## Not Much Help

(Continued from page 2)

They will nevertheless be faced with the necessity of carrying various programs through to completion, and for other reasons will have to maintain imports from us to some extent. The shift in net foreign investment may therefore temporarily provide a cushion of several billion dollars to declining business in this country.

The whole story is not told, however, by an analysis that concludes at this point. Conditions abroad are not the same as in 1947. There is no longer the same overwhelming need for goods of all kinds, requiring the use of available reserves whether they can be considered adequate or not. Other countries will undoubtedly attempt to insulate themselves from us in various ways, most of which will be discriminatory with respect to our trade. Restrictions on trade and foreign exchange, which have been eased or eliminated in the last two years, will likely be re-established. The objective of industrial countries will not only be to restrict the loss of reserves resulting from purchases here, but to maintain their exports by taking over our markets in other countries. The initial rise in our net foreign investment cannot therefore be expected to continue beyond a relatively brief interval.

Furthermore, the support temporarily obtained from the expansion of net foreign investment will be experienced in a period of declining total trade. This loss of export markets will contribute to making capacity in some industries excessive. The reaction on domestic investment will then constitute a partial offset to the rise in net foreign investment.

Although the combined effect may well be on the plus side, the net contribution to be expected is not likely to be of sufficient magnitude to modify the course of business here substantially. It is futile to look for a life-line from abroad. VLB

# BUSINESS BRIEFS

***PUBLICATIONS AND DEVELOPMENTS OF BUSINESS INTEREST***

## Characteristics of Home Buyers

As more and more families continue to go into debt to purchase new homes, the financial condition of mortgagors becomes increasingly significant to studies of economic stability. Recently published by the Departments of Labor and Commerce are figures summarizing the position of persons buying homes with FHA mortgages.

Financial Characteristics of Persons Buying New Homes with FHA (203) Mortgages

| | *1949* | *1954* | *Percent change* |
|---|---|---|---|
| Mortgagor's income | $3,880 | $5,139 | +32.4 |
| Property value | $8,502 | $10,678 | +25.6 |
| Mortgage amount | $7,143 | $8,862 | +24.1 |
| Loan-value ratio | 87.3% | 85.3% | − 2.3 |
| Mortgage term (years) | 22.8 | 22.9 | + 0.4 |
| Monthly mortgage payment | $55.59 | $68.62 | +23.4 |
| Median number of rooms | 4.9 | 5.4 | +10.2 |

Source: *Construction Review*, November, 1955.

Although the median mortgage and the median monthly payment increased 25 percent in five years, income rose even faster. The typical mortgagor, then, is seemingly more capable of carrying the burden of his mortgage than he was in 1949 (assuming that he has not increased his other obligations more than correspondingly). Further evidence of this is shown by the decline in the loan-value ratio.

The rise in monthly mortgage payments was only slightly greater than the general rise in rents, 22.4 percent between 1949 and 1954. That it is larger at all is probably a result of the trend toward homes larger than those built in the early postwar rush, since construction costs have not outrun other housing costs.

## For the Home

With a new product by the Glidden Company of Cleveland, Ohio, it is possible to paint tweed walls. Available in a combination of yellow, gray, and white, the chemical suspension of the colors is such that they will not mix even though applied with a single spray. Different tweed tones are obtained through varying the background color, since the three-color application is designed to cover only about one-third of the surface. The size of the color particles can also be determined by adjusting the air and fluid pressures in the spray gun. Called Glid-Tex, the coating may be used on woodwork, masonite surfaces, and painted surfaces.

Space-saving appliances are now being manufactured by Nutone, Inc., Madison and Redbank Roads, Cincinnati 27. Using a single 300-watt motor, they have designed a combination electric mixer, food blender, and knife sharpener. The unit not only takes up less space than the three appliances would separately but also costs substantially less, $59.95 for the combination.

Kling-Kote Liquid Cloth is now available for mending cloth, rubber, plastic, canvas, and leather. An elastic base material which dries translucent, waterproof, and flexible, it may be spread over the torn or worn area and it is supposed to outlast most materials to which it may be applied. It is produced by Downs and Company, 816 University Place, Evanston, Illinois, and retails at 79 cents a tube.

## Bank Charge Account Plans

A relatively new system for factoring accounts receivable is being tried in charge account bank plans. Under these plans, the bank sets up a centralized charge account department for the area which it serves, and with only a single account a consumer may buy at any store in the plan. When a charge sale is made, the store account is credited by the bank and the purchaser then owes the bank. Ability to extend credit without tying up funds and avoiding the costs of administering a charge plan are advantages of this plan.

A comprehensive study of such plans already in use and recommendations for possible improvements have been made by Professor Robert H. Cole of the University of Illinois Department of Marketing. Titled *Financing Retail Credit Sales Through Charge Account Bank Plans,* the publication is available from the Bureau of Business Management, College of Commerce and Business Administration, University of Illinois, Urbana, for $1.00.

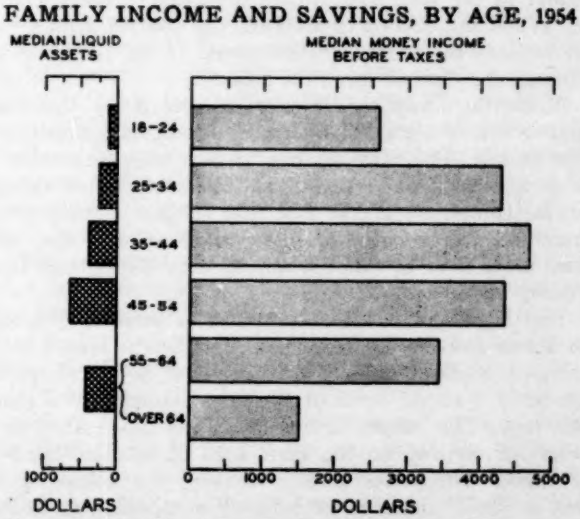
## Age and Spending

Economic needs, abilities, and motivations vary widely with age, according to an article in the November *Monthly Labor Review.* As a result the patterns of consumer spending and saving and their influence on the total economy are affected by changing age distribution of the population.

Both income and liquid assets held are distributed in a fairly normal pattern, as may be seen in the accompanying chart. Median income in 1954 rose to a high of $4,688 for the age group between 35 and 44. Even though income tends to drop off in older age groups, liquid assets are built up further in preparation for the drain placed on savings after retirement.

The purposes of saving and dissaving follow a regular pattern from the time of establishing a family to preparing for retirement. Setting up housekeeping, which often requires purchasing a home and needed equipment, is generally the first objective. Investment in a business is also largest in the earlier years. Provision for children is a problem more of the middle years, and preparation for retirement is the last purpose in the saving cycle.

**FAMILY INCOME AND SAVINGS, BY AGE, 1954**




Source: *Monthly Labor Review,* November, 1955.

# AUTOMATA IN PRODUCTION AND MANAGEMENT

**A. H. TAUB, Digital Computer Laboratory**

An automaton is a device capable of executing a set of instructions without human intervention after it first starts. The sequence in which the instructions or orders are carried out may be predetermined or may be determined by the device itself. Apart from the need for maintenance and repair, such devices may be capable of operating indefinitely without supervision or control by human operators.

If such objects are to be useful and versatile they must be composed of elements which have the following four distinct functional duties, though these need not be physically distinct: (1) remembering a list of instructions, (2) controlling the execution of an individual instruction, (3) executing the instruction, (4) communicating with the outside through media for transmitting information. The parts of an automaton performing these duties are sometimes called the memory, the control, the operating unit, and the input-output, respectively. In a particular device a single part may perform more than one duty or a fraction of a duty.

## How Automata Operate

Automata are playing a greater and greater role in the factory, office, laboratory, home, and recreation parlor. One example of an automaton is an up-to-date juke box that will play a number of selected records on the insertion of one or more coins. The following description of how such a machine might work is given to illustrate the functions of the various parts.

The machine is activated by inserting a coin. The input of instructions is accomplished by depressing various buttons which in turn instruct the machine to play a sequence of particular records. This information is remembered by the machine. The *memory* mechanism may consist of any one of a number of devices, for example a stop on the shaft on which the playing arm of the phonograph (the *operating unit*) travels. The *control* of the juke box may instruct the playing arm to move to a stop; when contact is made at the stop the control senses this and tells the operating mechanism to move the corresponding record to a playing position. The control senses that this has been accomplished and moves the playing arm to contact with the record. The *output*, the speaker of the juke box, is then activated — sound comes out. When the record is finished, the control senses this and repeats the former instructions. If no further stop is found, the control turns the box off.

A digital computer is also composed of the four organs: memory, control, operating (computing) unit, and input-output. The memory has to be rather extensive if the computer is to be useful and do complicated things, because computers are so fast that if they are not given a relatively large batch of instructions at once they will spend more time in communicating with the outside than in doing useful work.

The input device of a computer is something which can sense and distinguish between different marks on a recording medium, such as a sequence of holes in a paper tape or in a set of cards or the magnetization of a magnetic tape. The output device may be a typewriter, or a device for writing on the same kind of medium used as the input. The latter ability enables the computer to "talk to itself" or to other computers capable of reading the same kind of input.

The instructions to a computer consist of statements such as these: Multiply the number at place A by the number at place B and put the result at place C; then go to place D for your next instruction.

An automaton such as a computer is a simple-minded thing. It does a relatively small number of things but does them well and quickly. Thus the vocabulary of most computers, the list of orders it can execute, is rarely over 100 different elementary orders. Nevertheless it can do each of them in less than a thousandth of a second (some a hundred times faster) and rarely get tired.

In spite of the limitation on number of operations, computers can be used effectively in solving abstruse mathematical problems. This is so because these problems can be broken down into a sequence of orders that the computer can execute. The sequence of orders carried out by the computer is not necessarily predetermined, but where choices of action are involved, the course of action corresponding to each choice must be predetermined. For example, the list of instructions of most computers usually contains an instruction such as this: If the number in place A is zero or positive, take the following instruction as your next one. If the number in A is negative, go to place B for your next instruction. By use of such instructions, the computer can make decisions as to what to do as the computation progresses based on the results of the earlier computations. Thus computers can control their own actions (within the prescribed limits).

## Automata in the Factory

Such devices can, of course, in conjunction with other machines, control a very complicated manufacturing process. Thus, work going on at place A may refer to a place B where the number giving the difference between the size of a piece of metal being machined and the size of a standard finished part may be recorded. When this difference first becomes zero the next instruction placed at B may tell the machine to stop and then move another piece of metal to place A and start machining again.

As enterprises become larger and more complex, of necessity the role assigned to workers becomes one in which each must perform relatively routine operations for at least two reasons: Each worker is involved with a small part of a complicated whole and that part, to fit with the others, must meet rigid specifications, which may be beyond the sensory perceptions of unaided human beings. Because the accuracy requirements are so great, other devices than human senses as such are needed to see whether or not the designer's instructions have been carried out. Moreover, judgment often cannot be intelligently exercised on a small part of a complex whole. Hence, in the factories of mass-production industries, the role that humans play is merely one of guiding and controlling various tools with little room for the exercise of judgment and decision-making.

These requirements of mass production are such that the use of workers as humans, that is as decision-makers or judges of courses of action, is on the wane in the factory. The decisions that have to be made in many cases have to be reduced to such elementary ones that automata can make them better and therefore replace humans. An illustration of this is reported in the Decem-

ber, 1955, *Popular Mechanics Magazine* (page 95) in an article entitled "Tape Recording Guides Milling Machine." An engineer prepares instructions for a computer which in turn prepares precise time and motion orders for the milling machine and records these on magnetic tape. This tape is then used to control the machine, which makes all the cuts necessary to turn out panels for jet planes. In this case the output of one automaton (a computer) controls another (the milling machine) and the milling machine operator is dispensed with.

The use of automata is sometimes dictated by the requirements of the job. Thus the surface of the face of a color television tube requires the placing of various different materials on a piece of glass so accurately that only a machine can perform this task. Another example comes from the atomic laboratory. Dealing with radioactive material is sometimes so dangerous that very elaborate automata must be used.

## Automata in the Office

The use of humans is not only on the wane in the factory but also in the office associated with a large industry. The reasons are similar in both places. The size of the organization necessitates handling a large amount of data, which must be fragmented and subsequently reassembled in many different forms. Because of the mass of work, various jobs become particularized and individuals are assigned specific and menial tasks. A well-run office has many people in it, each doing well-spelled-out things and consulting the office manager only in exceptional cases. The latter are rare if the office manager is a good one, for too many special cases means that the categorization of the work has not been done properly. If the office manager is a good one, a worker who "finds" too many special cases soon has to find another job.

The important point is that because of the volume of work that has to be done in managing a large organization, the work done by a large proportion of the individual workers employed in the office is of necessity not work which uses them as humans, that is as decision-makers and judges of courses of action. Their job is summarized by statements such as: If this and that, then do so-and-so. Their role is simply to see if a premise is satisfied and if one is to do prescribed things.

Automata such as electronic digital computers can do these things better than humans in the office as well as in the factory. This presupposes that the premises have been completely listed and the courses of action completely laid out. However, computers can choose between various prescribed contingencies and determine the sequence of carrying out a preset list of instructions without human intervention. They can even be made to call for the office manager if something unforeseen happens.

Automatic computers have been used extensively by organizations such as the General Electric Company as aids in day-to-day record keeping. Payrolls are prepared, inventories kept, and a multitude of other tasks efficiently carried out. Sears, Roebuck has found that an automatic computer more than pays its way in the running of a mail-order house. The Bureau of the Census, which has one of the largest data-handling jobs in the country, has made extensive use of electronic computers and has thereby speeded up its operations greatly.

Since computers can read data from magnetic tapes at speeds of thousands of alphanumeric characters per second and do more than a thousand multiplications per second it is clear that such a machine can replace a great number of people sitting at desk computers and accomplish an assigned task in less time.

## On the Policy Front

The use of automata in production and management is thus a natural extension of the process set in motion when large-scale precise handling of a multitude of objects or items of information is required. In many cases much of the work in organizing the job that the automaton has to do has already been done in fragmenting the main task into a multitude of individual tasks.

In both production and management there are many problems which do not lend themselves to ready analysis and involve judgments and decision-making that are far from rudimentary. Here too, automata can play an important role. The reason is that in many cases the decision has to be based on a vast amount of information which must first be organized. Computers can process the required data and prepare analyses of it faster than humans. Thus, with the use of computers, decisions can be based on more up-to-date data than heretofore.

Computers can also be used to explore certain hypothetical contingencies whose consequences are not immediately apparent and thus help in choosing between various possible courses of action. For example, even though it may be known precisely how one factor affects others in an interrelated complex organization, the system may be so complex that many weeks of computation by humans are needed before all the consequences are explored. Nevertheless decisions have to be made before any long-drawn-out computation can be completed. In such a case the computer can play a great role.

The Quartermaster Corps of the Army uses the SEAC, the electronic computer at the National Bureau of Standards, to help in awarding various contracts. The computer calculates the optimum allocations to be awarded to various bidders who are located in various parts of the country and in turn supply various depots in this country and even abroad. A great number of factors, such as substitute items, shipping costs, and states of inventory, are treated simultaneously and interrelated in the computations. Many other organizations are using computers in conjunction with the theory of linear programming — a mathematical theory for handling large systems of inequalities — in handling their logistic problems.

It seems clear that modern production and management must, because of the nature of the problems with which they are faced, go to a more extensive use of automata and that these can free us from the "inhuman" use of humans, both in the factory and in the office. Machines can also augment the powers of humans working in imaginative fields by freeing them from the drudgery of exercising known trial-and-error methods of dealing with problems, by examining consequences of various assumptions and theories once they are formulated. This is true even though they can only formulate and calculate things they are told to do.

These devices are so efficient in carrying out routine tasks, the main work of modern large-scale organizations, that problems will no doubt arise in the transition to the state where workers are used as humans throughout our offices and factories. Dislocations may occur to the extent that tasks requiring human effort do not increase fast enough to counterbalance the savings achieved by automata. Unfortunately we do not yet have the wisdom to direct and use automata to ease such dislocations or to solve other policy problems requiring procedures not yet formulated.

# LOCAL ILLINOIS DEVELOPMENTS

Illinois business in November proceeded at a brisk pace, but the strong upward movement evidenced in months past appears to have subsided. Compared with a year ago, business activity is still at a higher level, but the margin is smaller because of the generally higher levels of business toward the end of 1954. Construction was still rising, however, exceeding the year-earlier figure in November by 39 percent. Gains of about 15 percent were recorded for life insurance sales, petroleum production, business loans, and steel production.

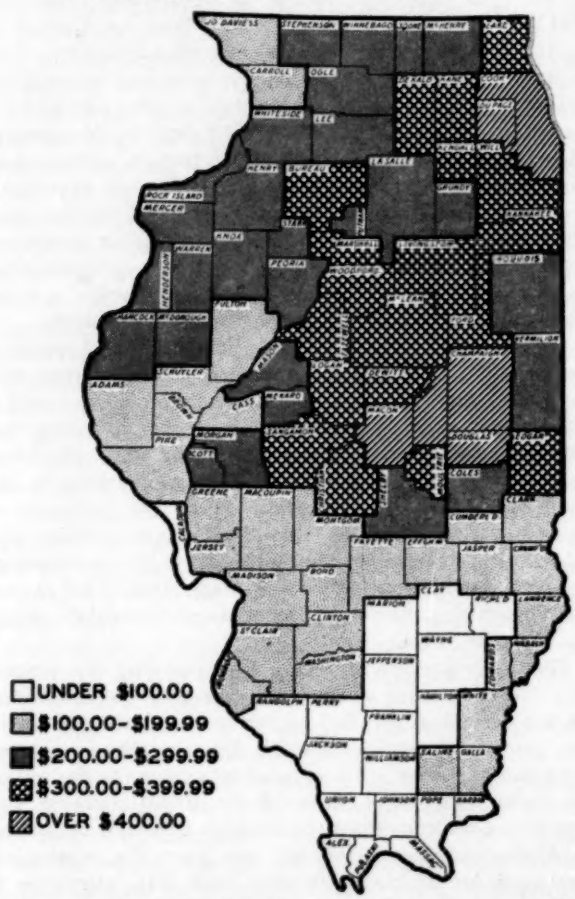
## Booming Land Values

Since 1950 the value of farm lands and buildings in Illinois has increased 40 percent to $242 an acre. Every county in the State registered at least some gain in the four years between the agricultural census of 1950 and that of 1954, although in some counties in the southern part of the State the gains were very small, according to figures compiled by Professor C. L. Stewart of the University of Illinois Department of Agricultural Economics.

Land values vary widely throughout the State, as may be seen in the accompanying chart. Cook County, reflecting the premium placed on land near any large city, records the highest average for the State, $626 per acre. In Pope County, at the other end of the State, the average price of farm land in 1954 was only $45 per acre.

In a general way land values fluctuate with the pattern of agricultural activity. The cash grain area in the central and east central sections of Illinois includes most of the counties with a value over $300 per acre; an average of $383 makes this the most valuable area. The dairy and truck district surrounding Chicago ranks second with $338 per acre. Most of the counties with values between $200 and $300 lie in the mixed livestock and livestock and grain areas in the northern and western portions. Moving south, land values decline as soil and climatic conditions become poorer. In the fruit and vegetable region of the southernmost counties, average prices are well below $100.

**FARM REAL ESTATE VALUES**




Source: Data compiled by C. L. Stewart from *1954 Census of Agriculture.*

## Aid for Local Projects

The State Health Department announced last month that eleven projects have been approved for the Federal-local grant-in-aid hospital improvement program. Additions of up to 200 beds have been approved for hospitals in Chicago, Macomb, Charleston, Canton, Woodstock, Rosiclare, Evanston, and Calumet City. Other projects include a public health center at East St. Louis and nurse-training facilities in Aurora.

The largest amount ever granted to Illinois public schools was authorized by the State Superintendent of Public Instruction in December. Claims for the 1954-55 school year rose to $85 million, 13 percent over the preceding year. For the most part the increase resulted from the raising of the minimum level of expenditure per pupil from $173 to $200, with the difference between the local tax and the guaranteed level made up by State equalization payments.

## Semimonthly Pay Period

The Illinois Circuit Court, in a December ruling, upheld a twice-monthly pay period for hourly wage earners working for Illinois companies. While workers can be paid more often than this, they cannot be paid less often. This ruling applies not only to workers in the State but also to employees who live and work elsewhere if the company for which they work is an Illinois company. The Court also held that the Illinois statute supersedes collective bargaining agreements reached before the law was passed.

The ruling, which is to be appealed, was made regarding the Pullman Company, which operates sleeping cars on railroads throughout the nation. The Court also forbade the company to credit overtime hours worked in one month against hours not worked in other months; this practice lowers the base for computing overtime pay.

## Gas Saving

Plans to join the Eldorado gas field in Saline County with the "Big Inch" pipeline system are in process. The Jade Oil and Gas Company of Tulsa is acquiring the rights to construct lines over the five miles separating the gas field from the Big Inch of the Texas Eastern Transmission Corporation. The Jade Company has contracted to supply the main line with five million cubic feet of natural gas a day.

According to the Illinois Geological Survey more than ten times this much has been wasted daily in the oil drilling operations at Eldorado. Flares are used to burn up most of the gas as it escapes from the wells.

Although the planned gathering line joins only the Eldorado North field to the pipeline, spur lines would allow the system to be spread over the many other gas fields in the area.

## COMPARATIVE ECONOMIC DATA FOR SELECTED ILLINOIS CITIES

**November, 1955**

| | Building Permits[1] (000) | Electric Power Consumption[2] (000 kwh) | Estimated Retail Sales[3] (000) | Department Store Sales[4] | Bank Debits[4] (000,000) | Postal Receipts[5] (000) |
|---|---|---|---|---|---|---|
| ILLINOIS | $28,074[a] | 1,028,359[a] | | | $13,878[a] | $16,993[a] |
| Percentage change from Oct., 1955 | −2.2 | +1.5 | | +7 | +0.7 | +14.2 |
| Percentage change from Nov., 1954 | +9.1 | +9.3 | | +7 | +8.8 | +3.7 |
| NORTHERN ILLINOIS | | | | | | |
| **Chicago** | $21,362 | 778,472 | | | $12,632 | $15,065 |
| Percentage change from Oct., 1955 | +13.7 | +1.7 | | +7 | +1.1 | +15.5 |
| Percentage change from Nov., 1954 | +27.2 | +8.2 | | +7 | +8.8 | +3.3 |
| **Aurora** | $ 161 | n.a. | | | $ 59 | $ 124 |
| Percentage change from Oct., 1955 | −75.0 | | | +4 | +0.9 | +5.2 |
| Percentage change from Nov., 1954 | −27.5 | | | +8 | +22.9 | +15.5 |
| **Elgin** | $ 590 | n.a. | | | $ 35 | $ 137 |
| Percentage change from Oct., 1955 | +92.8 | | | +16 | −5.6 | +37.4 |
| Percentage change from Nov., 1954 | +62.1 | | | +4 | +5.9 | +12.0 |
| **Joliet** | $ 266 | n.a. | | | $ 74 | $ 92 |
| Percentage change from Oct., 1955 | −29.3 | | | n.a. | +3.0 | −17.7 |
| Percentage change from Nov., 1954 | −87.8 | | | | +16.5 | −18.7 |
| **Kankakee** | $ 309 | n.a. | | | n.a. | $ 45 |
| Percentage change from Oct., 1955 | +36.7 | | | n.a. | | +4.5 |
| Percentage change from Nov., 1954 | +98.1 | | | | | +7.3 |
| **Rock Island-Moline** | $ 501 | 22,755 | | | $ 91[b] | $ 161 |
| Percentage change from Oct., 1955 | −67.9 | +5.0 | | n.a. | −1.7 | +3.2 |
| Percentage change from Nov., 1954 | −46.5 | +12.7 | | | +9.7 | −6.5 |
| **Rockford** | $1,008 | 37,653 | | | $ 162 | $ 207 |
| Percentage change from Oct., 1955 | −49.6 | +5.5 | | +9[c] | +2.0 | +7.6 |
| Percentage change from Nov., 1954 | −15.9 | +21.0 | | +9[c] | +22.4 | +5.9 |
| CENTRAL ILLINOIS | | | | | | |
| **Bloomington** | $ 181 | 7,561 | | | $ 54 | $ 100 |
| Percentage change from Oct., 1955 | −83.5 | +1.6 | | n.a. | −8.5 | +0.4 |
| Percentage change from Nov., 1954 | +182.8 | +7.1 | | | +1.1 | +31.6 |
| **Champaign-Urbana** | $ 197 | 9,928 | | | $ 62 | $ 106 |
| Percentage change from Oct., 1955 | −54.7 | +1.7 | | n.a. | −11.9 | −4.4 |
| Percentage change from Nov., 1954 | −40.3 | +5.4 | | | +13.6 | +6.2 |
| **Danville** | $ 233 | 10,074 | | | $ 50 | $ 67 |
| Percentage change from Oct., 1955 | +28.0 | +2.0 | | +11 | −5.4 | +4.0 |
| Percentage change from Nov., 1954 | +47.5 | +3.4 | | +8 | +13.4 | +14.4 |
| **Decatur** | $1,049 | 32,346 | | | $ 117 | $ 114 |
| Percentage change from Oct., 1955 | +37.7 | +4.8 | | −1[c] | −11.5 | +15.1 |
| Percentage change from Nov., 1954 | +28.9 | +19.8 | | +7[c] | +5.3 | +2.8 |
| **Galesburg** | $ 246 | 8,031 | | | n.a. | $ 39 |
| Percentage change from Oct., 1955 | −14.6 | +4.5 | | n.a. | | +11.5 |
| Percentage change from Nov., 1954 | −10.2 | +13.4 | | | | +2.5 |
| **Peoria** | $1,122 | 50,298[c] | | | $ 219 | $ 296 |
| Percentage change from Oct., 1955 | +129.9 | −0.6 | | +11[c] | −3.9 | +16.0 |
| Percentage change from Nov., 1954 | +42.7 | +8.5 | | +6[c] | +9.4 | +15.7 |
| **Quincy** | $ 241 | 8,520 | | | $ 39 | $ 69 |
| Percentage change from Oct., 1955 | −12.7 | −9.2 | | +8 | −7.9 | +2.1 |
| Percentage change from Nov., 1954 | +193.9 | +12.5 | | −4 | −2.1 | −2.0 |
| **Springfield** | $ 194 | 31,814[c] | | | $ 109 | $ 221 |
| Percentage change from Oct., 1955 | −45.2 | +2.7 | | n.a. | −2.8 | −4.3 |
| Percentage change from Nov., 1954 | −80.4 | +18.5 | | | +9.2 | +18.2 |
| SOUTHERN ILLINOIS | | | | | | |
| **East St. Louis** | $ 96 | 12,018 | | | $ 136 | $ 61 |
| Percentage change from Oct., 1955 | −84.9 | −13.7 | | n.a. | +1.8 | −26.9 |
| Percentage change from Nov., 1954 | +84.6 | +7.1 | | | −8.1 | −7.0 |
| **Alton** | $ 159 | 12,488 | | | $ 39 | $ 36 |
| Percentage change from Oct., 1955 | −5.8 | −5.9 | | n.a. | +4.2 | +18.7 |
| Percentage change from Nov., 1954 | +67.4 | +10.9 | | | +15.3 | +6.9 |
| **Belleville** | $ 159 | 6,402 | | | n.a. | $ 53 |
| Percentage change from Oct., 1955 | +28.2 | +3.6 | | n.a. | | +16.1 |
| Percentage change from Nov., 1954 | −28.1 | +7.1 | | | | +13.0 |

[a] Total for cities listed. [b] Includes East Moline. [c] Includes immediately surrounding territory. n.a. Not available.

Sources: [1] U. S. Bureau of Labor Statistics. Data include Federal construction projects. [2] Local power companies. [3] Data for October are not available. [4] Research Departments of Federal Reserve Banks in Seventh (Chicago) and Eighth (St. Louis) Districts. Department store sales percentages rounded by original sources. [5] Local post office reports.

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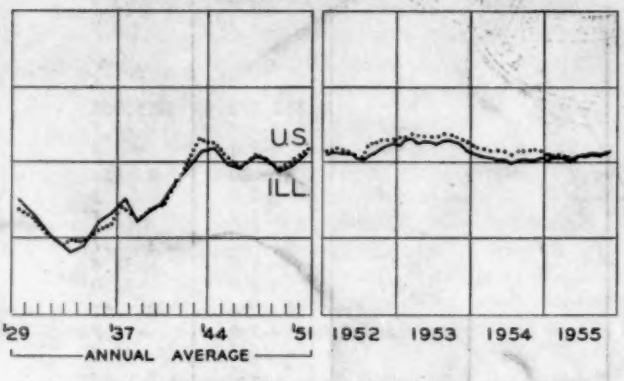
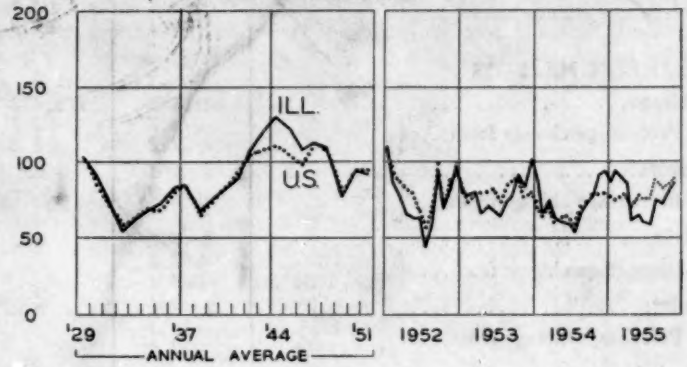
# INDEXES OF BUSINESS ACTIVITY

## 1947-1949 = 100

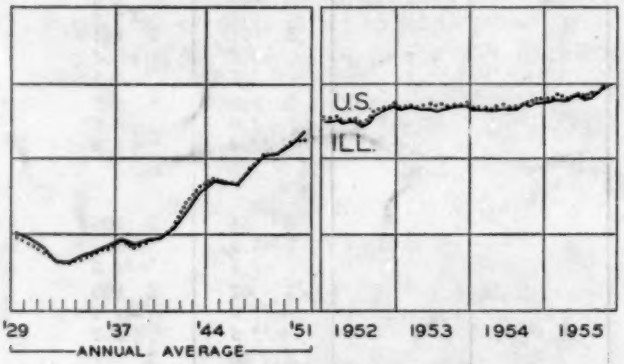
EMPLOYMENT - MANUFACTURING



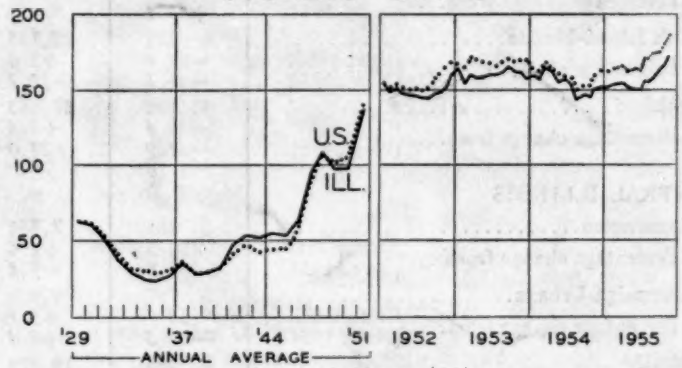

COAL PRODUCTION



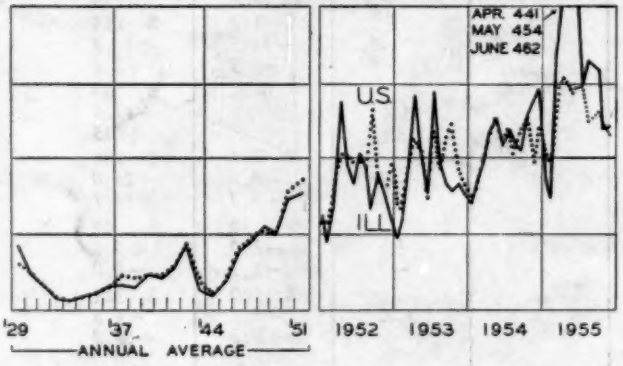

AVG. WKLY. EARNINGS — MANUFACTURING



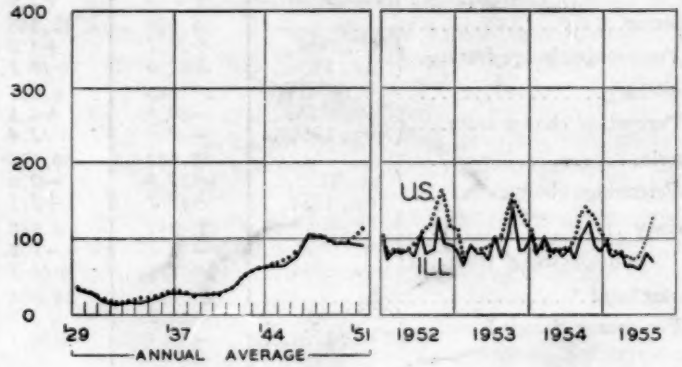

BUSINESS LOANS



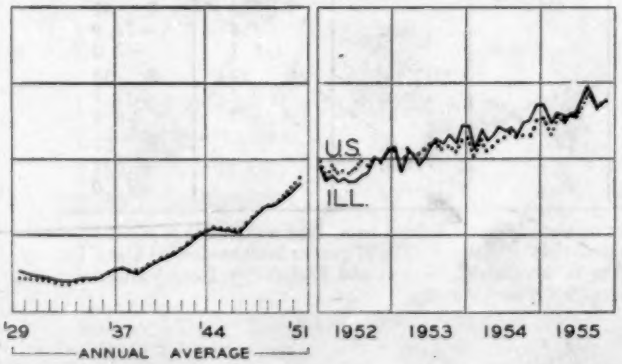

CONSTRUCTION CONTRACTS AWARDED

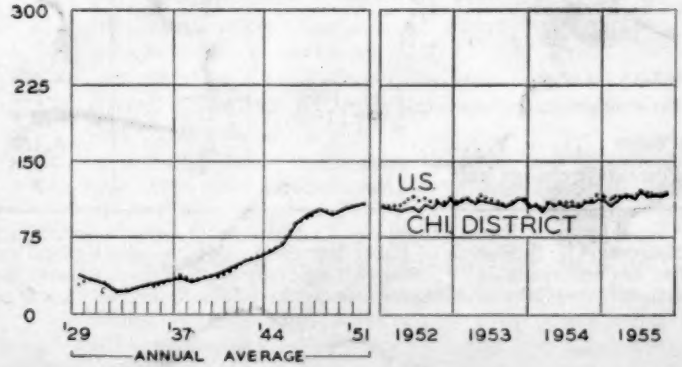



CASH FARM INCOME




ELECTRIC POWER PRODUCTION




DEPARTMENT STORE SALES